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Strangeness fluctuations in the HADES experiment

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The QCD phase diagram has been actively studied over the years in the experimental, and theoretical domains using e.g. lattice QCD. The fluctuations of conserved charges like electric charge, baryon number, and strangeness are useful probes to study the QCD phase diagram. The experimental study of higher order cumulants provides insights into potential critical behaviour, and is being analysed at different experiments. This work focuses on the analysis of strangeness fluctuations in Ag-Ag data collected at the High Acceptance DiElectron Spectrometer (HADES) in 2019 at 1.58 AGeV. HADES is a fixed target experiment at GSI that investigates the properties of dense baryonic matter at lower energy regimes around 1-2 AGeV. The lower particle multiplicity of strange particles in this dataset poses a challenge to the analysis of higher-order cumulants. This necessitates an exploratory study on the feasibility of using the strange particles in this analysis. The identification and reconstruction of strange particles like charged and neutral kaons in the Ag-Ag data is specifically looked into and will be presented.

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